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The Management of Severe Systemic Tetanus

Often the therapeutic measures utilized in controlling disease conditions and symptoms are devoid of sound physiologic principles. This is the case in the management of the severe tetanic episodes of systemic tetanus. In the past, the high mortality rate, in part, was indicative of the physician's inability to control, therapeutically, the violent spasms. Patients died from hypoxia or exhaustion, or both. The hypoxia was the result not only of an unmanageable airway but of tonoclonic contractions of all the respiratory muscles, including the diaphragm.

Current advances in symptomatic therapy are representative of a more physiologic approach; for example, the advocation of early routine tracheotomy and the intramuscular use of one of the curariform drugs to minimize the severity of the tetanic spasms. In contrast to the logic of these 2 steps, the traditional use of massive doses of depressant drugs still persists. Despite all of the above measures (tracheotomy, curare, and depressants), the severity of the contractions frequently becomes so great that their control results in deep central narcosis and muscular paralysis which lead to fatal respiratory depression.

Briefly, the core of symptomatic therapy for severe tetanic spasms involves the production of a flaccid paralysis and the maintenance of artificial respiration.

This article emphasizes the exigency for controlling the tetanic phases of systemic tetanus without the use of central depressants and outlines methods whereby normal respiratory physiologic functions can be maintained.

Effective symptomatic therapy should encompass primarily 2 physiologic principles: (1) the establishment of a normal respiratory exchange, and (2) the prevention of an increased oxygen barrier at the cells.

The spasms associated with severe systemic tetanus defeat most attempts to maintain a patent airway and adequate ventilatory exchange. Certainly, patients who manifest hyperirritability, trismus, minor clonic contractions, and bouts of cyanosis require immediate tracheotomy. The anesthetic of choice should be moderately soporific, powerfully relaxant, and permit the use of high oxygen tensions. An ultra-short acting barbiturate in conjunction with Flaxedil is ideal. Administered intravenously, it provides rapid induction, complete muscular relaxation, and permits the use of high oxygen tensions.

As soon as practical, after completion of the tracheotomy, the patient is placed in a Drinker-Collins respirator. The inhalator is equipped to deliver a helium-oxygen mixture, thereby avoiding "oxygen poisoning" and maintaining alveolar inflation. The entire respirator should be in Trendelenburg position to facilitate postural drainage of the tracheobronchial tree. The general supportive therapy and constant supervision required by patients in respirators who have poliomyelitis, also applies to curarized patients who have tetanus. These patients must have their positions changed frequently;

the tracheobronchial tree must be aspirated often; daily chest roentgenograms are of primary importance in detecting the development of atelectasis and pneumonia; a bronchoscopy should be done when catheter aspirations fail to remove mucous plugs from the bronchial tree, and antibiotics used freely for prophylaxis and therapy of pulmonary infections. To facilitate good nursing care, the patient should be removed from the respirator daily.

During severe tetanic seizures muscular rigidity develops which inhibits adequate ventilation of the lungs, in spite of the respirator. It is imperative that muscular spasm be released effectively so that normal respiratory exchange may be maintained by artificial means. Skeletal muscular flaccidity is obtained rapidly by the intravenous use of one of the myoneural blocking agents.

By means of intravenous administration, curariform drugs produce rapid relief of muscular spasm and the regulation of the dose can be adjusted easily so that no more than the minimal effective requirement is utilized. The individual dosage increments and the frequency of administration are determined by trial and must be sufficient to prevent tetanic muscular responses to stimuli at all times. With curarization all necessary technical procedures involved in nursing care may be accomplished without the precipitation of muscular spasms. Analgesic drugs should be markedly curtailed since the severe pain associated with tetanic spasm is abolished with the onset of relaxation.

The choice of the myoneural blocking agent deserves careful consideration. Several of the drugs have undesirable side effects which should be avoided in prolonged and continuous administration. At present, Flaxedil possesses the most desirable advantages. The onset and peak of actions are attained most rapidly with this drug. It does not produce blockage of the autonomic ganglia as do d-tubocurare and dimethyl curare. It is selectively depressant to the cardiac vagal fibers. An increase in the heart rate and a slight elevation in the blood pressure are clinical effects which are unique to Flaxedil.

Provision for an adequate airway and minute volume exchange of gases in the totally relaxed patient accomplishes delivery of oxygen to and removal of carbon dioxide from the blood stream but does not assure proper tissue respiration.

Cellular oxidation, particularly of the central nervous system, is of major importance. The patient who has tetanus suffers not only cerebral cellular hypoxia because of anoxemia, but also, actual cellular damage which results from the action of the tetanus toxin itself. For these reasons, massive doses of central depressant drugs should be avoided. Certainly, the use of depressant drugs, for the control of tetanic spasms, is unphysiologic if their mechanism of action is by oxidative interference with cerebral cells which already suffer from severe hypoxia. Soporific drugs in patients with tetanus are indicated for the production of normal sleep and the allaying of apprehension. The doses should remain within the normal range of usage for this purpose.

A case history demonstrating complete salvage of a moribund patient with tetanus is presented. Six days of continuous curarization was required.

It should again be emphasized that the measures suggested constitute a radical form of treatment intended for the severe convulsive phases of tetanus. Such treatment necessitates personnel experienced in the handling of respiratory emergencies, the use of curariform drugs, and the operation of respirators. (Anesthesiology, Nov. 1952, F. H. Van Bergen and J. J. Buckley)

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The Clinical Significance of Hemoptysis

Hemoptysis is an important symptom and often indicates serious disease. Pulmonary tuberculosis is probably the most common cause for bleeding, and it is estimated that approximately one third of the patients with tuberculosis bleed at some time. About half the patients with carcinoma of the lung have hemoptysis, which, however, is rarely the initial complaint. Over half the patients who have bronchiectasis bleed at some time. However, almost any pulmonary disease may cause bleeding, so that the occurrence of hemoptysis is not, in itself, diagnostic. Occasionally, hemoptysis occurs without a demonstrable cause.

The term hemoptysis is used to designate blood that comes from the respiratory tract at or below the larynx. Bleeding from the oral cavity, nares, pharynx and nasopharynx can usually be identified quite easily. Hematemesis must be excluded by a careful history of the nature of the bleeding episode.

In view of the seriousness of many of the diseases associated with hemoptysis, an attempt should be made in every case to establish the etiology of the bleeding. Yet is is the experience of all who deal frequently with this problem that there are some cases in which a diagnosis cannot be established. regardless of the thoroughness of examination or the length of observation. To study further the clinical significance of pulmonary hemorrhage, the authors reviewed the records of patients admitted to the Lahey Clinic over a 10-year period with the primary complaint of coughing up blood. Not all patients who bled from the respiratory tract are included, because those whose other respiratory symptoms predominated over hemoptysis were omitted. Those patients who were referred to the clinic because of abnormal roentgenographic findings were also omitted. This selection excludes patients with cancer who had a chronic cough, pain, or dyspnea as more prominent symptoms or referred because roentgenologic study had demonstrated a suspicious lesion. More than half the patients with bronchiectasis who are seen at the clinic have bleeding, but only a small proportion have hemoptysis as the chief complaint.

The present series includes 105 patients who fulfilled the criterion of blood spitting as the primary complaint. Fifty-seven patients were men, and 48 women. No patient was under 20 years, and over half were in the group 40 to 59 years of age; 16 were over 60 years of age.

The amount of the individual hemoptyses varied from a streak to more than half a liter. Most of the patients had expectorated a mouthful or more of blood, but only 6 bled more than 1 cupful. No patient died of pulmonary hemorrhage.

A definite diagnosis can be made by thorough study and repeated observations in the majority of patients who have pulmonary hemorrhage. In a minority, the exact etiology of hemoptysis cannot be found but, fortunately, serious disease is not likely to develop in these cases.

The patients were studied by chest roentgenograms——bronchoscopies in 81 and bronchograms in 68. Bronchiectasis was the most common cause of bleeding, occurring in 28.5%, and chronic bronchitis was found in 12%. The incidence of tuberculosis (2 cases) and carcinoma (3 cases) was unusually low because hemoptysis was rarely the presenting complaint of patients with these diseases.

In 19 patients (18%) no cause for the bleeding could be determined. Fourteen of these 19 had a follow-up period of an average of 25 months (1 month to 11 years). Five cases were lost to follow-up study. In none of those followed has any pulmonary disease developed.

Operation was performed on 23 patients, including 14 cases of bronchiectasis. The results were satisfactory in all. In addition to specific medical measures, rutin and vitamin C were tried, particularly in patients who had repeated minor episodes of hemoptysis, with apparently beneficial results. (New England J. Med., Nov. 20, 1952, C. R. Souders, and A. T. Smith)

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Encephalomyocarditis

This study draws attention to a disease entity in man which resembles that observed by Schmidt, and Schmidt and Helwig in apes, mice, and hamsters. The author has observed 3 instances of this condition which only rarely has been described in man. Though attempts to isolate an infectious agent, a virus in particular, were futile, it seems most likely that the disease was caused by a virus.

This disease may be characterized by clinically recognizable evidence of severe encephalitis combined with electrocardiographic changes indicating myocardial damage and, often, unexpected death; or the involvement of either brain or myocardium may not be recognized clinically until convulsions and coma appear, followed by unexpected death.

If poliomyelitis is excluded, information about a virus which may cause both encephalitis and myocarditis in man is exceedingly scanty. Not only are there now a number of cases of poliomyelitis on record showing microscopic involvement of the myocardium with or without pertinent electrocardiographic changes, but recently Jungeblut and Edwards were able to isolate poliomyelitis virus from both the spinal cord and the heart in 2 patients. Ungar studied an instance of diffuse interstitial myocarditis combined with epidemic encephalitis. Brenning reported 3 clinical observations on encephalomyocarditis, stressing a rather sudden onset with marked anxiety, reflex disorders with or without involvement of cranial nerves, and simultaneous marked subjective heart involvement with more or less pronounced circulatory insufficiency. Richdorf recently was impressed with myocardial failure with brain involvement in children. He reported 1 instance of subacute encephalitis with electrocardiographic changes. Koch has demonstrated an infectious agent (virus) in the blood serum of 1 patient, in the cerebral spinal fluid of a second, and in the blood serum, feces, and ear washings of a third. Neutralizing antibodies were found in the serum of those patients who recovered. Only 1 of these patients died. The autopsy showed an interstitial myocarditis, but the brain could not be examined. The virus produced convulsions and paralysis in rodents. Koch believes that the virus belongs to the encephalomyocarditis group of viruses.

Recently the author evaluated 3 cases of encephalomyocarditis. In spite of the fact that virus studies done on 2 of these patients were negative, it seemed important to relate these instances to underline the entity, encephalomyocarditis, and to stimulate virus studies on future cases. Only the most pertinent clinical and anatomic features of the cases are given.

Whenever encephalomyocarditis is considered clinically, it is imperative that the serum be examined for neutralizing antibodies involving the viruses of encephalomyocarditis, the meningoencephalitis virus, and the Columbia SK and MM viruses. At autopsy, an attempt should be made to isolate the virus from the heart and brain by the inoculation of mice, hamsters, or chick embryo. (Circulation, Dec. 1952, O. Saphir)

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A Comparison of the Histologic Pattern of Benign and Malignant Thyroid Tumors

The relationship between benign and malignant thyroid tumors has for many years been a subject for discussion. The interest has been due largely to a common opinion that many, perhaps most, thyroid carcinomas arise from a benign thyroid tumor which pre-exists for a variable length of time before transforming itself into a cancer. The evidence for such an opinion has been mostly clinical; the pathologic demonstration of the actual transformation or transition of a benign thyroid tumor to a malignant one has not always been clear or acceptable.

It is known that in most organs of the body benign tumors have malignant counterparts as far as histologic structure is concerned; therefore, in order to further the pathologic understanding and evaluation of thyroid tumors in general, a comparison and contrast of the histologic growth patterns of benign and malignant thyroid neoplasms seemed indicated. Such a study was carried out to determine, in addition to general information regarding thyroid tumors: (1) whether comparable histologic patterns do occur in benign and malignant thyroid neoplasms; (2) if comparable patterns occur, the relative frequency of the respective patterns in benign and malignant states; (3) the relationship, if any, of the various growth patterns to age and sex; and (4) the value of current histologic classifications of thyroid tumors.

The material utilized to carry out this study consisted of 500 thyroid adenomas and 200 thyroid cancers. In each series the cases were consecutive ones and all specimens studied had been surgically resected. In every instance the gross and microscopic structure of the benign or malignant tumor was reviewed, classified, and tabulated together with the age and sex of the patient. In the adenoma group only tumors considered to be true neoplasms were included; nodules of adenomatous (endemic) goiter were disregarded. The criteria used for the diagnosis of an adenoma were those suggested by Warren: encapsulation, homogeneous texture, variation from the structure of the gland outside the capsule, and evidence of compression of adjacent thyroid tissue by the nodule.

It is a comparison of the tabulation of the benign and malignant tumors which is of most interest. The most striking finding is the great variation in incidence between benign and malignant counterparts. Whereas in benign tumors a follicular structure is common and papillary structure rare (ratio 17:1), the exact reverse is true in the malignant tumors (ratio 1:2). Also of interest is the observation that——anaplastic carcinomas excepted—— the age of the patient at the time of removal and the percentage incidence in females are almost identical in all thyroid tumors, regardless of structure and regardless of whether benign or malignant. The ratio with which the subgroups of follicular adenoma are seen in the cancers is about the same as for follicular adenomas when they are considered as a group.

The foregoing material and data are a histologic analysis of surgical pathologic specimens. Tempting as it seems, one must be cautious about drawing definitive conclusions from such statistical studies. There are, however, several comments which seem justifiable.

The great discrepancy between the incidence of benign as opposed to malignant papillary tumors is certainly significant. The discrepancy is so great that, at the time of removal, a papillary tumor of the thyroid is many times more likely to be malignant than benign. When it is remembered that many follicular thyroid cancers also have papillary foci, the incidence and significance of the papillary pattern of growth in malignant tumors is even greater. The pathologist must view any tumor showing papillae with

suspicion and be careful to rule out malignant change before assuming that it is benign. The great discrepancy between the incidence of papillary structure in benign and malignant states suggests that perhaps most papillary carcinomas——the most common form of thyroid cancer——are malignant from their inception and do not arise from a pre-existing benign phase.

From an analysis of the foregoing data no valid reason is seen for perpetuating the subgroups of tumors of the follicular group, even though they can be readily distinguished. Whether considered separately or as a group, the follicular forms have a comparable age and sex incidence and appear in malignant tumors in about the same relative ratio as in the benign. It would seem that such subdivision serves little useful purpose and well might be discarded in the interest of simplification and clarity.

The regularity and uniformity of the age distribution and sex incidence of thyroid tumors of all types (except the highly malignant) in the data analyzed is remarkable. It is thought that the classification of thyroid tumors should be unified rather than broken down into diverse groupings; and why, if benign tumors predispose to cancer, the average age of the patient at the time of removal of each is almost identical. The data presented here neither prove nor disprove that thyroid carcinomas arise from pre-existing adenomas but do give rise to the conjecture that many thyroid cancers are, as concluded by Crile, malignant from their onset without passing through a benign phase. Such an observation suggests that solitary nodules of the thyroid, as with solitary nodules of the breast, should be removed principally for diagnosis and not only for the prevention of development of cancer. (J. Clin. Endocrinol., Nov. 1952, W. A. Meissner and R. G. McManus)

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N-Allylnormorphine Hydrochloride

N-Allylnormorphine hydrochloride (Nalline hydrochloride) is a white odorless powder, forming a clear colorless solution when dissolved in water, turning yellow on standing. The pH of a 1% aqueous solution is 4.5 to 5.5.

N-Allylnormorphine hydrochloride is a narcotic antagonist with little or no analgesic action of its own. Because it is able to antagonize morphine and its derivatives, as well as meperidine and methadone, it is considered a pharmacologic rather than a chemical antagonist. The drug apparently acts upon the central nervous system in such a way as to abolish certain effects of morphine, meperidine, and methadone.

Nalline will reverse the respiratory depression in patients narcotized by large doses of morphine and its derivatives, and meperidine and methadone. Respiratory minute volume of narcotized patients that has decreased to dangerously low levels is promptly returned to normal. Central vasomotor depression induced by narcotics, coupled with the anoxia from re-

spiratory depression, may cause a fall in blood pressure, decreased pulse pressure, and cardiac arrhythmia. When these circulatory disturbances follow the injection of morphine, they may be reversed by Nalline. The neurologic changes accompanying severe narcotic poisoning, i. e. loss of superficial and deep reflexes, absence of corneal and gag reflexes, and pupillary constriction, return to normal within 5 minutes after administration. Low eosinophil count in narcotic poisoning is returned to normal after the administration of this drug. Also, the electroencephalogram pattern, which resembles that of deep sleep in narcotic poisoning, is spontaneously changed to that characteristic of the waking state when it is administered. N-Allylnormorphine hydrochloride is recommended as a specific antidote in the treatment of overdosage with morphine and its derivatives, and meperidine and methadone. It may be used when accidental overdosage occurs in normal individuals and also when alarming symptoms develop in addicts. It is not, however, a cure for addiction. In parturient women sedated with meperidine, Nalline administered 10 minutes prior to delivery appears to have a favorable effect on the child. The first breath occurs more promptly, often after delivery of the head, and the cry is more rapidly instituted. It is not active against the depression induced by the barbiturates, cyclopropane, or ethyl ether.

Nalline appears to be quite safe to administer even though the lethal dose has not been established for man. It is suggested, however, that no more than 40 mg. be given in a single dose. Conventional methods of supportive treatment such as artificial respiration and oxygen therapy should not be neglected until the full effect of the drug is realized. Because the effects of long term administration are unknown, it should be used only for acute conditions. Dysphoria, miosis, pseudoptosis, lethargy, mild drowsiness, and sweating have been observed to accompany high dosage. Occasionally, nausea, heaviness of the limbs, and hot and cold flashes are noted. A pallor may be noted similar to that accompanying intravenous morphine. In morphine addicts, administration of N-Allylnormorphine may be followed by typical abstinence changes. (University of Michigan Medical Bulletin, Nov. 1952)

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Current Principles of Management in Gout

In the treatment of acute gouty arthritis it is now possible to abort and terminate acute attacks more quickly and regularly, and with fewer residual discomforts. In the prevention of acute seizures the frequency and severity of acute gouty attacks can be so reduced by dependable prophylaxis that even severely afflicted patients, with few exceptions, have relatively infrequent interruption of normal activities. In chronic gouty arthritis, a neglected phase of the gout problem, it is no longer necessary to await the develop-

ment of deforming or crippling tophaceous deposits, which are then treated by surgical drainage or by amputation. It seems feasible, by combined dietary restriction and regular use of suitable uricosuric drugs, to obviate the formation of tophaceous deposits, to prevent the further enlargement of tophi already formed, and even to mobilize long-established tophi in some instances.

These advances in management have come about for the most part as the result of systematic empirical exploitation of the potentialities of old drugs, such as colchicine, and the development of new therapeutic agents.

The immediate cause of acute gouty arthritis is not known. Despite common acceptance of the assumption that precipitation of uric acid in affected joints somehow evokes the acute attack, there is no valid evidence that uric acid per se, pharmacologically a virtually inert substance, is the offending agent; and there is a great deal of circumstantial evidence that it is not. One may conjecture that the real causative agent is a purine precursor of uric acid with potent vasomotor properties, of which a number are known. If so, this substance has not been identified; nor is it known whether the responsible agent is an abnormal metabolite formed only in gout or a normal metabolite formed in excess or improperly degraded or excreted.

Although uric acid is a physiologically innocuous substance, its relative insolubility in blood plasma predisposes to precipitation in the tissues as plasma levels rise, particularly if there is significant impairment of renal excretion of urate; why urate should be deposited by predilection in cartilage is not clear. These urate deposits in the tissues are, at first, painless and probably harmless but with increase in size they impinge upon neighboring structures and, acting as foreign body irritants, may elicit chronic inflammatory reactions and acute secondary infections. Very large deposits in the joints ultimately lead to deforming and incapacitating arthritis; in the kidneys sometimes to formation of kidney stones, and obstruction of the collecting tubules, and uremia.

It is apparent that proper regulation encompasses not one but two more or less distinct objectives. The first is suppression of the acute attacks which, as indicated, are not ascribable to uric acid per se but to as yet unidentified agents. The traditional drug employed for this purpose is colchicine, a specific of unknown pharmacologic action which has no detectable effect on uric acid metabolism and, while effective in the control of acute gouty arthritis, does not prevent the insidious development of chronic tophaceous gout.

In the more severe and progressive cases of chronic gout, particularly with the development of renal damage, there is added a second objective, that of prevention and mobilization of urate deposits in the tissues. To achieve this a state of negative urate balance must be induced for as long as may be required. This is best accomplished by limiting the formation of urate in the body, insofar as this is possible by restriction of the dietary intake of precursor purines, proteins, and fat and, at the same time, ac-

celerating the excretion of urate by regular and protracted use of a suitable uricosuric agent to counteract persistent tubular reabsorption of urate.

There are 3 more or less distinct uses for colchicine in the management of gout: (1) to terminate established attacks of acute gouty arthritis, the classic usage; (2) to abort impending attacks of acute gout; and (3) to prevent recurrence of acute seizures in the intercritical periods of chronic gout. As already indicated, colchicine is not a uricosuric agent.

The chief use for ACTH in gout is to terminate established attacks of acute arthritis, for which purpose it is a potent agent in most instances if given in adequate amounts according to a proper dosage schedule. It is effective in most cases responding unsatisfactorily to colchicine and has the advantage of not causing gastrointestinal upset. Its action is unspecific and appears to be suppressive and antiphlogistic through unknown mechanisms. Compound F also appears to be effective whereas oral cortisone, although it may be adequate in sufficient dosage, is not dependable. ACTH increases the urinary excretion of urate but causes too many side reactions to justify protracted regular use as a prophylactic and uricosuric agent in chronic gout.

Phenylbutazone is a potent analgesic and antiphlogistic agent, nonspecific for acute gout but more effective in controlling the local and systemic manifestations than such drugs as the salicylates or neocinchophen. The authors used it to terminate established attacks of acute gouty arthritis, to abort incipient seizures, and to suppress lingering joint pains and stiffness in chronic gout. Their experience with this drug is limited but the simplicity of treatment, the rapidity of subjective relief in most cases, and the infrequency of residual discomforts thus far would seem to make it the drug of choice in many instances.

Probenecid has no definite analgesic or antiphlogistic action in man and is of no value in the treatment of acute gouty arthritis; The sole indication for use of probenecid in chronic gout, at present, is as a uricosuric agent. As such it is exceedingly potent. A single, oral 2-gm. dose rapidly increases urate clearance, to a mean peak approximately fourfold, as a result of marked and highly selective suppression of tubular reabsorption of urate; this uricosuric effect persists for 24 hours.

In the regulation of diet in gout there is, as in the case of drugs, a dichotomy of purpose. One objective is to avoid precipitation of acute attacks, insofar as these are attributable to dietary indiscretions; the other is to minimize as much as possible the general trend toward insidious deposition of urate in the tissues. The 2 objectives cannot be wholly dissociated, of course, but they are not identical in principle or in practice. In both instances judgment as to the efficacy of dietary regulation is exceedingly difficult.

From time immemorial, overindulgence in food and alcohol has been regarded as a precipitating cause of acute gouty arthritis, and with good reason. It seems clear that the diet is only one of a host of factors involved, albeit an important one, and that, until more is known about the true under-

lying causes of acute gouty arthritis, dietary management as a prophylactic measure must be empirical and should be varied according to individual requirements and tolerances. Obviously, gluttony should be discouraged. (Am. J. Med., Dec. 1952, A. B. Gutman and T. F. Yü)

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Effect of Weight-Reduction on Normal and Raised Blood-Pressures in Obesity

There is abundant evidence from life-assurance statistics and other sources that people who are overweight have higher average blood pressures than those whose weight is normal. Clinical experience also shows that obese hypertensive patients are subjectively improved by weight reduction, which forms part of orthodox treatment. What is not so clear, however, is whether reduction in weight is likely to be followed by a significant fall in blood pressure in cases of obesity and hypertension.

The literature is by no means explicit on this matter, either because reports are founded on average figures for blood pressure before and after weight reduction in large series of cases, or because they only describe spectacular falls in blood pressure in selected cases of obesity after treatment. Moreover it is not apparent in various similar reports that the common fallacies inherent in serial blood pressure records have always been taken into account, and in general the clinician who wishes to know the likely effect of weight reduction on the blood pressure in any individual case will receive little information from the literature.

It therefore seemed worth investigating this question in obese patients with normal blood pressures and in others with hypertension. By using a standard sphygmomanometric technique suitable for the clinic or the consulting room, and by making proper allowances for variability in the expression of the results, it was hoped to reach conclusions of clinical value.

Although statistical analysis shows a significant regression of systolic blood pressure amounting to about 3.5 mm. Hg for each 10 lb. of weight lost, this finding is insufficient to be of clinical importance. Admittedly there were individuals in the present series who did show clinically significant falls of blood pressure in response to dieting. But unfortunately they did not provide any evidence or characteristics upon which such a response could be predicted in future cases. Thus it must be concluded from the present series, in accord with the opinion of Green and Beckman, that the effect of weight reduction on blood pressure in obesity with hypertension is both inconstant and unpredictable. Nevertheless the chance of an occasional success, coupled with subjective improvement in the great majority of cases, appears to justify the continuation of weight reduction as a routine measure in obese hypertensive patients. Moreover the loss of a substantial weight of fat must reduce the demands made on the heart during ordinary daily life.

Thirty-seven obese patients, of whom 18 had normal blood pressures and 19 hypertension, were treated by weight reduction. According to the criteria specified, a clinically significant fall in systolic blood pressure, alone or with the diastolic blood pressure, was observed in 4 cases with normal blood pressures, and in 7 cases with hypertension. No clinical or statistical evidence could be found to distinguish the cases in which the blood pressure fell with weight reduction from those in which it did not. Statistical analysis revealed that, on average, the systolic blood pressure was reduced by 3.5 mm. Hg for every 10 lb. of weight lost. (Lancet, Nov. 29, 1952, L. Martin)

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Safety Saves Nurses

Nurses are involved in a startling number of accidents. Hospital employees have a higher accident rate than workers in manufacturing, ship building, or in aircraft, sheet metal, and steel plants. Each year thousands of nurses' hands, fingers, arms, trunks, legs, heads, feet, eyes, and toes —in that order—are "accidentally" injured. These injuries are caused by lifting strain, cuts, bites and blows from patients, foreign bodies, collisions, falls on wet floors, obstructions in halls or stairways, and disease.

Remarkable improvement in nurses' accident rates can come from a two-way approach to the problems based upon the application of a principle well known to nurses—prevention. The individual nurse can develop her safety sense to help prevent an accident from occurring to herself and others. Collectively, nurses can sponsor and support an organized safety program.

Why are hospitals relatively unsafe places to work as compared with many industrial plants? The primary reason is probably that industry long ago recognized existing hazards and developed a program to prevent accidents. Safety programs in industries throughout the nation are carefully coordinated through the efforts of the National Safety Council. Through the Council, safe-practice ideas that have been developed by workers in one plant are quickly passed along to other organizations. Thus industrial plants, by recognizing the problem and joining together in an accident-prevention program, have saved thousands of lives and limbs.

Industry also placed safety within individual plants on an efficient basis by appointing safety committees, made up of employees and supervisors, to study all aspects of the accident situation and to develop an organized safety program. Many hospitals have followed industry's example and have established similar safety programs.

This attack on accidents has produced amazing results. The accident rate at the Columbia-Presbyterian Medical Center was reduced 31% during a 3-year period. The number of accidents dropped from 764 in 1947 to 554 in 1949.

Hospitals aren't faced with the hazards of industry. Stop and think for a moment. Remember oxygen——a torpedo if carelessly handled; ether——an explosive gas; glass——sharp, cutting glass in syringes, tubes, tumblers, and flasks; razor-sharp surgical blades; live steam; stairways; elevators; and swinging doors. Think about nurses lifting patients and being exposed to unsuspected contagious disease. Consider flower petals on waxed floors. Some thought should also be given to accidents to patients——errors in medication, hot water bottle burns, falls from beds, wheel chairs, and stretchers, operating room explosions, fires.

It's really amazing how simple corrective action is. Industry's thoroughly tested and proved methods need only be applied. The hospital should organize safety-prevention activities, and everyone should participate in and promote the program in every possible way. A safety program will not be completely successful until everyone is "sold on safety." The hospital will unquestionably be benefited by wholehearted endorsement and participation. Safety saves money, reduces injuries to patients, cuts insurance premiums, reduces absenteeism, and has other related benefits. Important as these factors may be, the essence of an organized safety program is that someone may be saved the pain of an accident caused by lack of knowledge or by carelessness. (Am. J. Nursing, Dec. 1952, D. C. Carner)

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A Method for Deepening the Mandibular and Maxillary Sulci to Correct Deficient Edentulous Ridges

The technic for deepening the mandibular and maxillary sulci may be considered in 2 parts: presurgical and surgical stages.

The presurgical stage consists of obtaining a colloid impression of the ridge and sulci. A master cast is made and then duplicated in plaster. The sulci are contoured to the desired depth on the plaster model, taking into consideration anatomic relations. Roentgenograms will determine the proximity of the mental foramen to the crest of the ridge. An acrylic resin splint is then prepared from the newly contoured model.

The surgical stage consists of 4 parts: The first involves the lingual frenum and underlying muscle fibers; the second the mental foramen; the third the soft tissues of the ridge and the labial, buccal, and lingual mucosae; and the fourth consists of immobilizing the newly formed sulci.

Lingual frenotomy with muscle transplant procedure (this may not be required). ——In this procedure, a transverse incision is made through the frenum about 5 mm. below the attachment to the ventral surface of the tongue. The muscle fibers are dissected and severed, the cut ends being sutured to the muscle bundle immediately below. The mucous membrane is undermined and closed.

Lowering the mental nerves and vessels. —— Incision is made along the crest from about the second molar on one side to the same point on the oppo-

site side. Vertical incisions down to the floor of the sulcus are made at the posterior extremities of the ridge incision. The mucoperiosteum is then laid back exposing the mental nerve and blood vessels. These are repositioned lower by preparing a groove from the mental foramen inferiorly to the mandibular canal.

Procedure for securing mucous membrane to line the sulcus. — This is accomplished by undermining the already detached flap all the way around, making sure that adequate mucosa has been undermined and is completely detached from the underlying tissue. Three small holes, one in the midline, and one on each side in the cuspid region, are drilled through the ridge just below the crest. The mucoperiosteal flaps are then snugly sutured to the ridge by means of a mattress suture through the holes. The space between the flaps on the crest will heal by secondary intention. This allows the mucosa ordinarily lining the ridge to form the bottom of the sulcus.

Immobilization of the sulci. — The splint is now inserted and held in place for 6 days by means of circumferential wires. The wires loop over a gauze roll and metal splint beneath the inferior border of the mandible.

The maxillary sulcus is extended similarly, except that immobilization is performed by the rubber tube method suggested by Kazanjian. The horizontal ridge incisions are made slightly differently, utilizing some of the palatal mucosa to cover the buccal and labial surfaces of the ridge.

Old dentures may be used by building up the periphery, and using them during the posthealing period to maintain the depth of the sulcus. (J. Oral Surg., Oct. 1952, DeO. Cooley)

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Central Fibromyxoma of the Maxilla

Central fibromyxoma of the jaws does not occur with great frequency. The tumor is composed of mucous connective tissue which is similar to Wharton's jelly and the embryonic mesenchyme.

Fibromyxoma of the jaw appears to have a better prognosis than does fibromyxoma occurring in the long bones of the skeleton. In long bones the tumor is frequently malignant and recurs with great frequency after removal. A fibromyxoma of the jaw is more indolent than those of long bones, and recurrence is not frequent if enucleation is complete.

It has been recognized that fibromyxoma is frequently associated with missing unerupted or partially formed teeth. Thoma and Goldman, reporting on 11 cases of myxoma of the jaw, observed that in all but 1 case the tumor was associated with 1 or more missing or embedded teeth. It usually occurs in the younger age groups, appearing in the second and third decades most frequently. It affects both jaws, with the mandible being most often involved.

The tumor is usually reported to be unaccompanied by pain, however, Thoma and Goldman stated that intense, persistent pain is the chief complaint. Sonesson reported 8 cases of central fibromyxoma of the jaw and related that none of these patients registered pain as a complaint.

In the majority of cases of fibromyxoma reported in the literature there was a history that a tumor had been present for a few months to a year prior to initial examination. In a few cases the tumor was reported to have been present for a longer period. Harbert and coworkers reported a case of myxoma of the maxilla and antrum of 13 years' duration. There is no typical roentgenographic appearance of fibromyxoma of the jaw. This tumor has been noted to simulate polycystic ameloblastoma as well as odontogenic cyst. The most frequently observed roentgenographic picture is a radiolucent area with scalloped, irregular margins. The central portion is traversed by fine, gracile, straight, or angular trabeculations. The tumor expands the jaw and often causes complete destruction of the cortex.

Surgical treatment consists of complete enucleation or radical excision if possible. Resection may be necessary in some cases in which the tumor has completely destroyed a portion of the jaw. Wawro and Reed have described 2 cases of fibromyxoma of the jaws in which wide resection was performed in an effort to irradicate the tumor. Roentgen therapy is generally agreed to be ineffective. In Sonesson's series, the tumor recurred in 4 of 8 cases. One tumor recurred once, 1 recurred twice, and 2 recurred 3 times after operation.

Grossly the tumor is grayish yellow, shiny, and glistening. Its consistency varies; some portions of the tumor may be sticky, gelatinous, or semisolid, and others may be firmer.

Histologically the fusiform or stellate cells are elongated, having cytoplasmic processes stretching in various directions. Fine collagen fibers can be seen extending between these cells. The nuclei, which are slender and threadlike, are hyperchromatic, but they vary little in size and shape. Mitotic figures are rarely seen. The tumor is well supplied with fine vessels whose walls have a single layer of endothelium. Plasma cells, lymphocytes, and large mononuclear cells are sometimes present. (Oral Surg., Oral Med., and Oral Path., Dec. 1952, K. W. Bruce and R. Q. Royer)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Navy Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps, and old and new addresses.

The Mismanagement of Chronic Abdominopelvic Pain

It is unfortunate that so many patients, and far too many doctors, are imbued with the idea that the only solution for many of the ailments of women, especially for chronic pain and discomfort in the abdominopelvic region, is surgery. Because of this, a large number of unwise and unnecessary laparotomies are being performed, too many of them in the abdomens of those women who complain of chronic low abdominal pain.

It is agreed that abdominopelvic pain in women can be most baffling and that a keen insight and considerable experience and time are required to make a proper interpretation of such cases. Why do so many doctors think that they must resort to surgery (too often the initial therapeutic attempt) in the treatment of women with chronic abdominopelvic pain?

The fact that most of the cases brought to mind were under the care of some other doctor only proves that many patients with chronic abdominopelvic pain whom you think you have cured have really gone elsewhere. Ask yourself these questions: In how many of your appendectomies in women did you find it not to be the source of the trouble? In how many of your laparotomies do you carry out unnecessary surgery to justify opening the abdomen? How often do you advise surgery for a small cystic ovary or an indefinite mass after one pelvic examination? How often do you make a diagnosis of postoperative adhesions without thoroughly investigating the case? How often do you question your female patients about their emotional life?

The author maintains that in these days of sulfa and antibiotic therapy, organic pathology plays an unimportant role in the over-all etiology of chronic pelvic pain. There are several conditions, or supposed conditions, which are traditionally diagnosed as being the cause of chronic abdominopelvic pain, but which rarely are. The most common are: chronic appendicitis, postoperative adhesions, ovarian cysts, and retrodisplaced uteri.

The author believes that women with chronic lower abdominal or abdominopelvic pain are more mismanaged than any other group of patients, and that this will continue to be the case until a more thorough investigation is made routinely, not only of their physical status but also of their emotional life. Anxiety states, chronic tension, marital difficulties, domestic troubles, sexual ignorance, sexual conflicts, chronic sexual stimulation, fear of pregnancy, fear of pelvic diseases or pelvic cancer, and many other emotional upheavals are the most frequent causes of chronic abdominopelvic pain. These conditions cannot be tested for in the laboratory; the physical findings are only suggestive; the real facts can only be unearthed by a definite investigation of your patient's emotional background. In order to do this, the confidence of the patient must be obtained and then gently, but determinedly probe into her past and present emotional history. (Hawaii M. J., Nov-Dec. 1952, R. T. West)

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Vallestril

A new synthetic estrogen, Vallestril, was administered orally to 28 women with severe menopausal symptoms, 1 young woman with acne vulgaris, 3 women with postmenopausal osteoporosis, and 1 elderly male with prostatic cancer and bone metastasis.

Vallestril is an effective synthetic estrogen that is singularly free from toxic effects and complications, especially uterine bleeding. It is a potent estrogen in animals, more active than estradiol, and is effective both orally and parenterally. It is excreted in mother's milk, and is not destroyed by the liver. Clinically, it quickly controls menopausal symptoms, as well as the pain of postmenopausal osteoporosis and of the osseous metastases of prostatic cancer. The beneficial effect of the medication appears within 3 or 4 days in most menopausal patients. There is also evidence that the patient can be maintained in an asymptomatic state by a small daily dose, once the menopausal symptoms are controlled. This was also found to be true in 1 patient with prostatic carcinoma and in 1 of 3 women with postmenopausal osteoporosis.

When severe menopausal symptoms make prompt relief desirable, the patient should be started on 9.0 mg. of Vallestril daily for 2 weeks. If symptoms are relieved the dose can be reduced to 1.5 mg. 3 or 4 times a day for an additional 2 weeks. If improvement continues it may be possible to carry the patient on a maintenance dose of 1.5 to 3.0 mg. a day. After an additional month, it should be possible to discontinue Vallestril to determine if a remission has been induced or has spontaneously ensued. If symptoms recur, administration of the drug may be resumed on the lower dosage schedule with satisfactory response.

The failure to encounter withdrawal bleeding in any patient was most gratifying and may have been due to the fact that the doses used were not sufficiently great to cause this condition. It was possible to give Vallestril to patients who had had alarming vaginal bleeding from other estrogens administered in daily doses of about a third or a quarter of the dose of Vallestril without the reappearance of this bleeding. This advantage of Vallestril is particularly puzzling in view of the demonstration by Courrier and his associates that allenolic acid had greater vaginal and uterine effects than estradiol in several species of animals. Whether this indicates greater inhibitory effects upon the anterior pituitary body as compared with its influence on the end organ, in the human subject, cannot be stated. The authors intend to study the effect of Vallestril on urinary gonadotrophic excretion as well as to compare its end-organ effects with those of stilbestrol in several amenorrheic patients. Perhaps these studies will help clarify this question.

Regardless of the possible explanation, this characteristic of Vallestril is unique as well as clinically advantageous. The authors did not encounter it with natural or synthetic estrogens, all of which produced withdrawal bleeding of considerable extent, particularly in menopausal and postmenopausal women. Several of the patients in the present study experienced this

complication while taking stilbestrol or some other estrogen. Uterine bleeding was frequently so severe or persistent as to require curettage for control or diagnosis or both. Estrogen therapy often had to be stopped or combined with testosterone to prevent or control this complication. For this reason alone, Vallestril is indicated in the therapy of the menopausal syndrome and in other conditions in which estrogens have value.

Of considerable interest also was the response of the patient with prostatic cancer to administration of Vallestril. This patient obtained complete relief of symptoms from stilbestrol but found it necessary to interrupt this therapy for several weeks because gynecomastia developed after the use of stilbestrol for 2 or 3 months. Since initiation of Vallestril therapy he has had equally complete relief of symptoms without gynecomastia, despite uninterrupted use of the drug for over 10 months. This suggests predominant inhibitory effects upon the anterior pituitary body and calls for further study of Vallestril from this point of view.

Studies of radioactive iodine uptake in 2 menopausal women indicated no significant change in thyroid function as a result of the administration of Vallestril. In the doses utilized, Vallestril appeared to exert no influence on thyrotrophin secretion by the pituitary body. (New England J. Med., Nov. 27, 1952, M. I. Sturnick and S. L. Gargill)

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Radiation Injury of the Kidney

The older literature contains a few reports of nephritis in man following radiation of the kidney for renal neoplasm, but nothing has been recently published regarding the pathologic histology seen in the kidneys associated with modern fractional methods used in the routine therapy of inoperable extra-renal neoplasms. In a recent paper Kunkler et al. described a clinical syndrome associated with kidney damage caused by radiation of malignant testicular tumors, and emphasized the limit of renal tolerance to x-rays. This author has established a figure of 2,400 r as the dose which, when given homogeneously to both kidneys, will cause renal failure. The kidney is in that group of organs considered to be radioresistant and it was believed that dosage in excess of 5,000 r was necessary to cause gross shrinkage of the organ.

The histopathology of the experimental lesion produced in animals following radiation of the kidney region consists primarily of marked tubular destruction with interstitial fibrosis and, to a lesser extent, patchy glomerular hyalinization. Kidney transplanted beneath the skin of the loin and heavily irradiated show similar changes. These lesions in the experimental animals were thought to be analogous to the lesions in the material presented.

For the most part the lesions produced in man as a result of atomic warfare and in animals exposed since at the various test detonations, have been caused by a extremely large single dose of radiation. The lesions re-

sultant from this massive exposure were found to be a triad composed of hemorrhage, necrosis, and secondary infection with involvement of nearly every organ and tissue in the body. The kidneys of animals exposed at the Bikini detonation and in others given a large dose from a conventional x-ray source had hemorrhage beneath the mucosa of the kidney pelves, and in severe cases, petechiae in the cortical parenchyma. These kidneys appeared grossly not unlike the "flea-bitten" kidneys of focal glomerulonephritis. Microscopically, however, the chief lesions were degenerative changes in the proximal and distal convoluted tubules together with occasional areas of focal necrosis and hemorrhage. The glomeruli and arterioles appeared normal. The only other notable finding was a focal infiltration of the interstitium at the corticomedullary junction by large mononuclear cells.

The microscopic lesions described in the kidneys following a simple massive exposure indicate that the primary lesion is chiefly tubular and it appears that this portion of the nephron is more radiosensitive than the glomerular tissue. Although the lesion described in the case reported appears chronic with scarring of the interstitium as a marked feature, it is seen that the proximal and distal convoluted tubules appear to be the chief site of destruction. In this respect the lesion is similar to hydronephrosis in the relatively early stage. Grossly, however, in this lesion, which is ascribed to radiation injury, no hydronephrosis or pyelonephritic streaking was present, and a tumor dose of radiation of 4,700 r had been received by the kidneys.

In the experience of one of the authors, in the early stages, radiation injury produces a fibrinoid type of arterial degeneration seen principally in the subendothelial connective tissue. This progresses to endothelial proliferation, and also proliferation of subendothelial connective tissue. Even years after radiation therapy, hyaline material is often found in the wall of the vessel. This stains bright red with Masson's stain and is characteristic of radiation injury. As a complication of the endarteritis produced by radiation, there may be thrombosis in the early stages, while in the later stages the progressive narrowing of the lumen caused by fibrosis may lead to ischemia and scarring, such as that found in the kidneys in the case reported. (Canad. M. A. J., Dec. 1952, P. W. Davey, J. D. Hamilton, and H. D. Steele)

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Sulfadimetine

This report discusses the therapeutic effects of sulfadimetine (6-sulfanilamido-2, 4-dimethylpyrimidine) in 40 patients with urinary tract infections caused, in most cases, by gram-negative bacilli. The claims for this drug are that: (1) It is the least acetylated of the sulfapyrimidine derivatives, (2) it is very soluble in the unconjugated state in urine within a range of

pH 5.5 to 8, (3) it is free of toxicity, and (4) it has high therapeutic potency in experimental animals.

Sulfadimetine is effective against a variety of gram-negative and gram-positive bacteria commonly encountered in urinary infections. In many instances the drug possesses a greater antibacterial effect in vitro than other sulfonamides. It is often effective when antibiotics fail.

Sulfadimetine shows a low order of acetylation (about 10%) and blood levels of 6 to 8 mg. per 100 cc. of free sulfonamide are easily maintained on 4 gm. daily.

Forty unselected patients with acute and chronic urinary tract infections were given sulfadimetine. All patients had pyuria, positive urine cultures, and the usual clinical signs and symptoms. Twenty-four had calculi, stricture, prostatic obstruction, or were on constant catheter drainage. Obstructive lesions, if present, were treated during sulfadimetine therapy. Twenty-nine patients failed to respond to prior treatment with other antibiotics: penicillin, 12; penicillin and aureomycin, 10; aureomycin alone, 4; penicillin, chloromycetin, and aureomycin, 1; penicillin and sulfamethazine, 1; and chloromycetin, 1.

The results were evaluated on a clinical and bacteriologic basis after a follow-up period varying from 12 to 271 days. If the urine became sterilized and all symptoms disappeared, the final response was classified as cured. If, in mixed infections, the patients improved and the count of a bacterial strain was markedly reduced but not eliminated, the response was classified as good. If there was no bacteriologic improvement, or if the original flora disappeared but was replaced by other resistant strains, the response was classified as failure.

Clinical trial in the 40 patients yielded a satisfactory response in 27. Improvement was observed in some patients with polyvalent as well as with monovalent infections. There were no untoward reactions. With no attempt made to maintain an adequate daily fluid intake or to alkalinize the urine, no renal or hematopoietic toxicity occurred.

Apart from the notable lack of toxicity and the low order of acetylation which recommend its use, sulfadimetine frequently proved more effective than other sulfonamides and antibiotics.

The in vitro sensitivity test is a reliable guide to the clinical antibacterial effectiveness of this drug. (Surgery, Dec. 1952, A. M. Rutenburg, F. B. Schweinburg, and B. Sears)

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Treatment of Low-Voltage Burns

The prognosis of an electrical contact injury is one of the most difficult of all accidental injuries to determine and must always be guarded. Occasionally a patient who sustained what appeared to be a slight shock with or without

a burn of some severity, may suddenly die several days after injury, confounding the physician who may have reassured employer and family that the injury was a trivial one.

It is considered axiomatic that alternating current is 300 to 400% more dangerous than direct current. Direct currents of 200 to 250 Ma. may be borne without serious injury, whereas 70 to 80 Ma. of alternating current may produce death.

These figures are in turn dependent on the resistance of the body contacted by the current. Resistance both at the site of contact and within the body is important, as well as the size and type of electrode encountered. The skin of all parts of the body is the most resistant to electricity, and of this tissue the soles of the feet and palms of the hands head the list, the former offering as high as 100,000 ohms resistance, while a good calloused palm may offer 1,000,000 ohms. Moisture on the surface of the body makes a great difference to the skin resistance, perspiration decreasing the resistance greatly, and when submerged in water skin resistance may drop to 1,200 ohms. Still another variable is the distance between electrodes, and in consideration of resistance the point of entrance of the current as well as that of exit is important.

The pathway of the current has much bearing on the effects of the current. The heart is the danger area. Currents from one foot to the other are seldom fatal no matter how great, whereas a trifling current through the chest may prove fatal. Left hand contacts to opposite hand or chest and especially to feet are the most dreaded. One author urges that those visiting power plants keep their left hand continually in a pocket.

Death from electric current generally occurs from either ventricular fibrillation of the heart or a failure of the respiratory center or sometimes from a combination of the two.

When apparent death occurs from ventricular fibrillation, breathing continues, becomes exaggerated, then fails entirely after about 2 minutes and death ensues rapidly. Cardiac function stops and the patient is pale in color—not cyanotic. With failure of the respiratory center the victim is unconscious and breathing is stopped, but the heart action continues. Fall in blood pressure is rapid. The patient is cold and cyanotic. Death ensues within 10 minutes unless artificial respiration is instituted. Artificial respiration must be kept up for hours if need be until rigor mortis or post-mortem lividity begins to occur, or unless the victim is pronounced dead. Then there are the delayed deaths, occurring minutes, hours, or even days after the contact, caused by sudden dilatation of the heart or internal hemorrhage in some of the vital centers.

The local lesions that occur as a result of electric contact may be trivial or extensive and the end result in each individual case can never be accurately foretold. A harmless-looking surface burn may turn out to be deep, with charring of tissues clear through to and including bone. Often when these deep burns slough, alarming hemorrhage may suddenly result if a vessel of sufficient size is involved.

A sequel to the actual results of the electrical contacts, is the falls that result, and these often produce more shock, even to the extent of fatality, than the electrical contact itself.

In treatment, with due caution, the victim should be freed from the contact as quickly as possible, though in many cases enough electromotive force is generated by the contact to throw him clear.

Artificial respiration should be started at once carefully and methodically. Operators should be changed often enough so that the procedure may be kept up for hours if need be without undue fatigue. In this particular type of case, mechanical respirators and inhalators are considered dangerous and their use is not advised.

As soon as possible hospitalization should be arranged, where oxygen and carbon dioxide may be of assistance in re-establishing normal respiration and other methods for combating shock may be available. Few if any drugs aid in combating electric shock. Dr. Cecil Drinker believes that caffein and sodium benzoate given intravenously may help, but discards all other stimulants.

While this treatment is being given, care must be taken, if a local burn has resulted, to keep it as clean as possible. Nothing further should be done until hospitalization has been obtained. There the simple cleansing with soap and water and tanning with gentian violet 1% seem to be the most commonly used method. The burn should at all times be treated as a clean surgical wound. Some surgeons have advised cutting out the burned area early, especially a flash burn which may be deep, but the great majority advise more conservative methods consisting of routine sterile dressing and nothing more until the slough has definitely separated.

Another complication which may add greater shock results from extensive burns caused by burning clothing.

One significant point in electric burns is that the resulting toxemia is not nearly so severe as that seen in other types of burns, and secondary infection is much rarer. Tetanus antitoxin must be administered if the burn is serious. The use of antibiotics is indicated in a sloughing burn. (Indust. Med. & Surg., Dec. 1952, H. S. Brown)

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The Use of Refrigerated Autogenous Bone Flaps for Cranioplasty

This article reports the use of frozen autogenous bone flaps for delayed cranioplasty. The use of frozen autogenous bone fragments for the repair of cranial defects has previously been reported by Elliott and Scott.

Six cases are reported in which it was necessary on 7 occasions to remove the bone flap because of cerebral swelling. In all 7 instances, the osteoplastic technique was used to enter the skull. The pericranium was

stripped away from the flap and left attached to the integument. No special effort was made to reconstruct continuity of the pericranium. The scalp was closed in routine fashion in layers. Upon removal, the flap was wrapped sterilely in dry gauze and a towel, labeled, and stored in a deep-freeze unit maintained at minus 4.0° C. After varying intervals the flaps were reinserted as delayed autogenous free grafts. Each case was followed clinically and with serial x-rays of the skull.

There were no failures when refrigerated bone was used for cranioplasty. In this series the refrigeration period varied from 10 days to 11 months. Prompt clinical wound healing without excessive fluid collection or foreign-body reaction was the rule. Serial x-ray studies revealed an initial mild absorption, particularly at the edges of the flap, during the first few months; this may gradually increase through the period of a year. After this time the x-ray density increases towards uniformity. Clinically union was always firm from the time of immediate wound healing. Verification of the gross occurrence of bony union was found 4-1/2 months after cranioplasty in 1 case. Further evidence for bony union appeared in the microscopic sections of biopsy material taken 31 months after cranioplasty. The temporal arrangement of healing resembles closely that reported by others with free bone flaps immediately replaced without physical treatment.

Replacement of refrigerated autogenous bone flaps removed 10 days to 11 months previously was carried out 7 times in 6 cases. Results were satisfactory for periods of 6 weeks to 9 years in all instances. Three of 4 refrigerated autogenous flaps boiled 10 minutes prior to replacement were subsequently removed because of marked absorption or infection.

When feasible it is believed that refrigeration of the bone flap upon its removal and its subsequent replacement is superior to other methods of cranioplasty made necessary if the flap is sacrificed completely. (J. Neurosurg., Nov. 1952, G. L. Odom, B. Woodhall, and F. R. Wrenn)

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Effects of Dextran and of Polyvinylpyrrolidone Administration on Liver Function in Man

The use of polyvinylpyrrolidone (PVP) and of dextran has been proposed for increasing the volume of plasma after hemorrhage, and for the treatment of shock. Earlier experience with acacia used for this purpose indicated that it impaired liver function. In addition, the use of acacia depressed the formation of plasma protein, possibly because of its action on the liver. Although dextran and polyvinylpyrrolidone have been used extensively in foreign clinics, there is little specific information concerning possible ill effects on the liver function of man. Bohmansson and coworkers have made some studies of dextran, using for this purpose bile pigment, hippuric acid, and phosphatase determinations. The authors extended these studies by means of other liver

function tests, including several generally considered to be more sensitive than those used by these workers, and, in addition, made similar studies of polyvinylpyrrolidone.

No systematic study has been made of liver function tests to establish which of the large number described would most efficiently detect toxic effects on the liver of substances of the type being investigated. Experience with the study of liver disease has shown that groups of tests are more dependable than a single test. The group of tests used in the present study was found to be capable of detecting significant involvement of the liver in a high proportion of patients suffering from hepatitis and cirrhosis. The limitations imposed by the necessity for frequent repetition of the tests largely determined the final selection of the procedures used.

The effects of polyvinylpyrrolidone and dextran were evaluated according to the frequency with which significant changes appeared in the patients who had received infusions as compared with those in the control group. A significant change was defined as 2 standard deviations from the preinfusion value of the polyvinylpyrrolidone or dextran groups, or the first value in the control group. The chi-square method was used to test the significance of the frequency with which these changes occurred. Corrections were made for small sample size according to Yates. P values of 5% or less were considered significant.

The frequency with which significant changes occurred in serum bilirubin concentration, cephalin-cholesterol flocculation, zinc sulfate turbidity, sulfobromophthalein retention, serum globulin, thymol turbidity and flocculation, urobilinogen, and coproporphyrin did not differ to a significant degree from that in the control group.

The only changes observed in the groups receiving the plasma expanders that differed significantly from the controls were the decreased serum total protein and albumin concentrations 1 day after the infusions. These may be attributed to hemodilution brought about by addition of a considerable amount of oncotically active material. After 7 days the preinfusion value had been largely regained in the groups receiving 1- and 2-liter infusions of dextran but not in the groups given polyvinylpyrrolidone, which required a longer time. The cause of the increase in thymol and phenol turbidity following the administration of polyvinylpyrrolidone is explained elsewhere.

The absence of definite evidence of liver damage following 1-liter infusions of dextran or polyvinylpyrrolidone led to increases in the amounts administered. Five patients therefore were given 2 liters, 1 liter on each of 2 successive days. The larger amounts also failed to cause significant differences in the patients treated with polyvinylpyrrolidone. Some moderate changes occurred in 2 patients after the infusion of 2 liters of dextran, and these persisted in the follow-up period. Similar changes were encountered in control patients, and the probability of the changes observed being due to chance cannot be excluded.

No ill effects were observed clinically after the infusion of either dextran or polyvinylpyrrolidone, with a single questionable exception involving polyvinylpyrrolidone. (Arch. Surg., Nov. 1952, J. G. Reinhold, C. A. J. von Frijtag Drabbe, M. Newton, and J. Thomas)

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Course in Special Weapons, Isotopes and Military Medicine

The second course in Special Weapons, Isotopes and Military Medicine for the benefit of medical department officers residing in the 11th, 12th, and 13th Naval Districts is scheduled to convene at the U. S. Naval Station, Treasure Island, San Francisco, Calif. on Monday, 2 March 1953, and continue through Friday, 6 March 1953.

The course will present problems likely to be confronted and techniques to be employed in the field of radioactivity. The subjects will be presented by speakers of outstanding prominence in their specialties. Thus it is assured that the program will be interesting and informative to all medical department officers.

Although this course is conducted primarily for the benefit of Reserve medical department officers serving on inactive duty, officers serving on active duty may be given "Authorization Orders" in accordance with current instructions. Inactive Naval Reserve Medical, Dental, Medical Service, Nurse, and Hospital Corps officers residing in the 11th, 12th, and 13th Naval Districts who desire to attend this course should submit their request for 6 days' active duty for training to the Commandant's office at the earliest practicable date. Acceptance of orders to attend this course WILL NOT, in any way, increase the possibility of involuntary call to active service. (Reserve Div., BuMed)

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From the Note Book

1. A critical essay on the present status of the ballistocardiogram which summarizes the more interesting features of this field and viewing this field against the background of changing medical interests appears in Annals of Internal Medicine, Nov. 1952, I. Starr.

2. A report describing needle biopsy of the liver as aiding in diagnosis but also helping to determine treatment and disposition of military patients during an active military campaign appears in the American Journal of Medicine, Dec. 1952, CAPT. S. H. Deschamps, MC, USA and LT. COL. A. Steer, MC, USA.

3. Every third month the Bureau of Labor Statistics reports a detailed breakdown on medical care costs. The cost of medical care and drugs for moderate-income families in large U. S. cities rose 0.8% the third quarter of this year. All physicians' fees rose 1.2% between mid-June and mid-September. General practitioners' fees rose 1.1% and surgeons' and specialists' fees 2%. Rates for hospital beds rose 1.1%. Blue Cross premiums advanced only a minor fraction in the 3-month period. (J. A. M. A., 13 Dec. 1952, Washington News)

4. A review of the clinical course and development following measles encephalitis in patients at the Children's Hospital, Boston between 1943 and 1949 appears in the American Journal of Diseases of Children, Nov. 1952, E. Meyer and R. K. Byers.

5. Lupus erythematosus is one of the more common diseases of the skin and occurs in 3 forms, the chronic discoid type, a subacute type, and an acute type, the latter 2 being accompanied by systemic symptoms. (Post-Graduate Medicine, Dec. 1952, C. W. Lane)

6. The technic of reduction of acute sigmoidal volvulus by means of a rectal tube inserted through a sigmoidoscope has been found to be of great value at the Massachusetts General Hospital. Only 1 of 11 patients required primary operation. (New England J. Med., 27 Nov. 1952, E. Hamlin, Jr.)

7. The scalenus anticus or Naffziger's syndrome is described in a patient who first developed symptoms in the right upper arm after an attack of right-sided pleurisy with referral of pain to the right supraclavicular area. This case illustrates that factors other than mechanical and traumatic mechanism may sometimes cause the scalenus anticus syndrome. (Surgery, Dec. 1952, A. Blain III)

8. A report evaluating a series of 162 patients with cancer of the tonsil appears in Archives of Surgery, Nov. 1952, H. A. Teloh.

9. A review of the nerve supply of the vocal cords and cases of dysfunction of the cords due to various intrathoracic conditions is presented in Archives of Otolaryngology, Nov. 1952, L. S. Titche.

10. Volume 27, No. 25, Proceedings of the Staff Meetings of the Mayo Clinic dated 3 Dec. 1952 presents 5 cases of a lesion involving the optic chiasm, each of which showed unusual characteristics. R. D. Weyand, W. McK. Craig, and C. W. Rucker.

11. A case of Bell's palsy in which cortisone was given orally 9 days after the onset of paralysis with striking improvement is reported in Archives of Ophthalmology, Dec. 1952, M. H. Robbins.

12. Trauma occurring in industrial workers is a common cause for the clinical onset of a previously quiescent peritendinitis and bursitis of the shoulder. (Indust. Med., Dec. 1952, B. Behrend and P. S. Friedman)

13. A report dealing with an exploratory study of fluid compartments in 33 patients with a wide variety of advanced neoplastic disease appears in Cancer Research, Nov. 1952, K. H. Kelly, H. R. Bierman, and M. B. Shimicin.

14. The tradition that drugs should be avoided in elderly people, subscribed to by many professors emeriti of medicine is well founded empirically. This is particularly true of sedative drugs. (Geriatrics, Nov.-Dec. 1952, W. T. Salter)

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List of Recent Reports Issued by Naval Medical Research Activities

U. S. Naval School of Aviation Medicine, U. S. Naval Air Sta., Pensacola, Fla.

The Effects of Decompression on Subjects Repeatedly Exposed to 43,000 Feet While Using Standard Pressure Breathing Equipment: Incidence of Aeroembolism in an Individual Subjected to 82 Exposures. NM 001 059.21.03, 15 July 1952.

Illusory Perception of Rotation Following Constant Turns in a Link Trainer. NM 001 059.01.31, 15 Aug. 1952

Use of Standard Naval Aviation Oxygen Equipment Under Water. NM 001 059.29.01, 15 July 1952.

The Significance of Attitudes Toward Peers in Discriminating Between Naval Aviation Cadets of "High" and "Low" Motivation. NM 001 058.05.04, 1 Aug. 1952.

The Estimation of the Cerebral Blood Flow from the Arterial Carbon Dioxide Tension. II. Applications in Aviation Medicine. NM 001 059.06.08, 1 Aug. 1952.

U. S. Naval Medical Research Unit #3, Cairo, Egypt.

The Relationship of Exposure Time to the Molluscocidal Activity of Copper Sulfate, NM 005 050.38.06, July 1952.

A Survey of Neutralizing Antibodies to Poliomyelitis in Cairo, Egypt, NM 007 082.13.03, 10 Mar. 1952.

The Study of Epidemiology of "Q" Fever I: "Q" Fever in Egypt as Revealed by the Complement Fixation Test on Human Sera. NM 007 082.13.07, July 1952.

The Study of Epidemiology of "Q" Fever II: The Presence of Coxiella Burnet II ("Q" Fever) in Egypt. NM 007 082.13.07, July 1952.

Outbreaks of Typhus in Cyrenaica Lybia. NM 005 050.39.23, Aug. 1952.

A Holder for Cover-slip Blood Smears. NM 007 082.09.04, Apr. 1952.

Ornithodoros Salahi Sp. Nov. (Ixodoidea, Argasidae) From the Cairo Citadel, with notes on O. Piriformis Warburton 1918 and O. Batuensis Hirst 1929, NM 005 050.29.11, 6 Aug. 1952.

Terramycin-Streptomycin Therapy in Acute and Subacute Brucellosis Due to Brucella Melitensis. NM 007 082.11.03

Medical Mission to the Yemen, Southwest Arabia 1951. III: A Serological and Bacteriological Survey. NM 005 050.39.21, 22 Sept. 1952.

U. S. Naval Medical Research Institute, NNMC, Bethesda, Md.

The Shwartzman Phenomenon III: Modifications of Nitrogen-Mustard Suppression. NM 000 018.05.03, 26 Aug. 1952.

Molecular Kinetics of Muscle Adenosine Triphosphatase. NM 000 018.04.07, 25 Apr. 1952.

An Unsuccessful Attempt to Protect Mice Against Schitosoma Mansoni by Transfer of Immune Rat Serum. NM 005 048.02.28, 29 July 1952.

On the "Contractility" of Bacterial Flagella. NM 000 018.04. 21 Aug. 1952.

Nitrogen Analysis of the Oxidation of DL-Alanine by Salmonella Anatum. NM 005 048.19, 29 Aug. 1952.

Cholinesterase Activity, Weight, Water Content and Pathology of Small Intestine of Rats Subjected to X-Radiation. NM 006 012.04.54, 29 Aug. 1952.

The Thermodynamics of Free Energy Transfer in Certain Models of Muscle Action. NM 000 018.06.10, 10 Sept. 1952.

U. S. Medical Research Lab., U. S. Naval Submarine Base, New London, Conn.

An Historical and Critical Review of Loudness Recruitment. NM 003 041.21.06, 20 May 1952

Experiments on Fluctuation of Auditory Acuity. NM 003 041.21.06, 22 June 1952.

Developments in Submarine and Small Vessel Lighting. NM 002 014. 02.01, 8 Sept. 1952.

Studies in Short Duration Auditory Fatigue. V. An Investigation of the Spread of Fatigue within Narrow Frequency Limits. NM 003 041.34.04, 16 May 1952.

Remarks on the Climate in Alaska. NM 002 015.07.02, 31 Mar. 1952.

Analysis of Colors Used in Dvorine Color Perception Testing Charts. NM 003 041.10, 28 Aug. 1952.

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BUMED INSTRUCTION 6320.6 12 Dec 1952

From: Chief, Bureau of Medicine and Surgery
To: Comdts, Naval Districts and River Commands

Subj: Medical Services for naval personnel attached to Naval Reserve Officers Training Corps Units

Ref: (a) BuMed C/L 52-15
(b) Chapter 20, ManMedDept.

1. This instruction establishes a procedure for medical care of naval personnel attached to Naval Reserve Officer Training Corps Units.

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Notice

The Index to Volume 20, Nos. 1-12 of the News Letter will appear separately and will be mailed to the Distribution List.

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BUMED INSTRUCTION 6210.1 12 Dec 1952

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Quarantine of dogs and cats brought into the Panama Canal Zone

Ref: (a) Chapter 13, Rules and Regulations Governing Navigation of the Panama Canal and Adjacent Waters, 1952 Edition

1. This instruction informs naval personnel of the quarantine requirements for cats and dogs brought into the Panama Canal Zone. BuMed C/L 51-102 is cancelled.

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BUMED NOTICE 6620 12 Dec 1952

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Dental Personnel

Subj: DD Form 477, Dental Service Report; cancellation of previous directives

Ref: (a) BuMed Inst 6620

1. This notice cancels directives superseded by reference (a) which contains all directions necessary for accomplishing subject report. The directives cancelled are: BuMed C/L 51-95; Ltr BuMed-61-wmm EM/A3-3 Ser b1122 of 21 Aug 1951; Ltr BuMed-61-tms EM/A3-3 Ser b1436 of 23 Oct 1951; Ltr BuMed-61-mmr EM/A3-3(477) Ser c34 of 7 Feb 1952.

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BUMED INSTRUCTION 5720.1 12 Dec 1952

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Medical/Dental Personnel

Subj: Medical Department exhibits; coordination of

1. This instruction promulgates information relative to the approval and coordination of Medical Department exhibit activities. BuMed C/L 51-118 is cancelled.

BUMED INSTRUCTION 6150.6 17 Dec 1952

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical/Dental Personnel

Subj: Medical Records of foreign military personnel; disposition of

1. This instruction promulgates the procedure for the disposition of medical records of foreign military personnel and their dependents. The second sentence only of paragraph 2d and all of paragraph 3d of BuMed C/L 51-152 are cancelled.

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PREVENTIVE MEDICINE SECTION

New Director of Preventive Medicine Division

The Preventive Medicine Division of BuMed undergoes a change in administration with the detachment of Captain R. W. Babione (MC) USN as Director of the Division in December. He is being relieved by Captain O. L. Burton (MC) USN, who served as Director from June 1945 to July 1948. The staff of the Division appreciates the interest and guidance it has received from Captain Babione during the past 4 years and counts itself fortunate in having an officer of Captain Burton's experience in preventive medicine take over the direction of the Division.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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BuDocks Manual Project

The Bureau of Yards and Docks is in the process of preparing its "Budocks Manual" and supplementary technical publications, to present in detail the basic authority, responsibilities, and policies of the Bureau and "serve as the official guide for both Bureau and field personnel in administering the functions of the Bureau!"

Of the supplementary technical publications, which are contemplated for completion sometime in the summer of 1953, the following may be of interest to Medical Department personnel: Atomic Warfare Defense (restricted), TP-PL-2; Biological Warfare Defense (restricted), TP-PL-4; Chemical Warfare Defense (restricted), TP-PL-3; Medical and Dental Facilities, TP-Pw-22; Navy Driver's Handbook, TP-Tr-3; Organization and Functions of the Bureau; Personnel Protective Shelters (restricted), TP-PL-8; Pest Control, TP-Pu-2; Refuse Disposal, TP-Pu-1; Antisabotage (confidential), TP-PL-9; Soil Conservation, TP-Pw-5; Storage Facilities, TP-Pw-16; Storm Drainage Systems, TP-Pw-1; Water Supply Systems, TP-Pw-12; Water Supply for Advanced Bases (restricted), TP-PL-6; and Special Services (Welfare and Recreation), TP-Pw-13. Check with your local Public Works officer for availability and for information on procurement. (BuDocks Technical Manual, Nov. 1952)

Note: A similar arrangement exists in the Medical Department directive system, in which the Manual of the Medical Department provides the basic guide and the Manual of Naval Preventive Medicine will provide the major technical information in the field of preventive medicine.

Communicable Disease Control

Tetanus Toxoid Vaccine

The labels on certain batches of tetanus toxoid instruct users to give inoculations at 2- to 3-month intervals. In general, the immunizing response is better with the longer spacing between doses. No harm will be done, however, and no significant effectiveness will be lost with the 1- to 2-month spacing specified in current immunization directives.

Venereal Disease Control

Chancroid

Within the continental United States, the incidence of chancroid has reached such a low level that research upon this problem has come to a virtual standstill. From a research and investigative standpoint this is unfortunate because the incidence remains high, or is increasing, in the

Far East and other areas of the world, and there are still many problems relating to the epidemiology of this disease that remain to be answered.

Epidemiology. —Chancroid is a disease of filth and neglect, and is generally seen in those who practice a very low level of personal hygiene. It is seen almost exclusively in uncircumcised males. Trauma is an important predisposing factor; in fact, the unbroken skin cannot be infected even with a pure culture of the organism which causes the disease. This probably explains why organisms have frequently been cultivated from the genitalia of female patients without lesions. The mucous membrane is much more resistant than the skin, and rarely is the site of a lesion.

One of the striking epidemiologic facts in chancroid is the comparative rarity of the disease in the female, even though she is the source of the male infection. Approximately 95% of reported cases are in males. The examination of female contacts of males with lesions generally reveals not only the absence of lesions in the female, but also cultures from the suspected source are usually negative. It is difficult to account for this absence of the organism in sexual contacts. Study is needed of other potentially infectious areas of female contacts to determine whether they might harbor the etiologic agent of chancroid. Also because the agent is known to require blood for adequate growth, it is possible that the female may manifest organisms only during certain phases of the menstrual cycle, when such a medium is present in the genital tract. These avenues of investigation need exploration.

Clinical Manifestations. —Chancroid is characterized by a short incubation period, absence of systemic manifestations, and rapid ulceration. The lesions, which are usually multiple, become excavated because of the rapid necrosis. The edges of the lesion are generally undermined and ragged, and the base is covered with necrotic granulation tissue. It is probably the most painful and tender of all genital lesions. The favored locations in the male are the orifice of the prepuce, the inner surface of the prepuce, and the frenulum. Edema of the surrounding tissue frequently results in paraphimosis. In from one-third to one-half of cases, a bubo develops, which is more often unilateral than bilateral. The lymph nodes in the inguinal region become enlarged, painful, and tender, and fuse together into a single mass, which later undergoes softening in the center, and the overlying skin tends to become shiny and purplish. Rupture of the bubo produces a draining sinus if treatment is not instituted. Unlike the bubo of lymphogranuloma venereum, the bubo of chancroid usually contains a single abscess cavity with a single draining sinus.

Syphilis and chancroid were often confused in the early literature because double infection frequently occurred, with the chancroid appearing first because of the shorter incubation period. Subsequently the lesion took on the appearance of a syphilitic chancre, thus leading to the belief that both clinical manifestations were caused by the same etiologic agent. Syphilis should be suspected in every chancroid which does not respond to the usual

therapy, and in any case, subsequent follow-up with serologic tests for syphilis is mandatory. Because chancroid does not respond to commonly used antisyphilitic drugs, it should be suspected at least as a concurrent infection, whenever a lesion diagnosed as syphilis fails to heal under penicillin therapy.

Diagnostic tests. —The most reliable diagnostic tests in chancroid are those which demonstrate the organism namely, the smear and the culture.

(a) The smear. Considerable difference of opinion has been expressed with reference to the value of the simple smear. Although the sensitivity of this method is not great, being approximately 40% (in the hands of the author), its simplicity gives it considerable value. With a platinum loop, pus is obtained from beneath the edge of the lesion and streaked lengthwise upon a clean slide, with a back-and-forth motion. Wright's stain is applied to the smear in the usual manner. If considerable secondary infection is present, it is a waste of time to try to find the etiologic agent of chancroid. In the author's experience, contaminating organisms are absent as one moves from field to field, in approximately 40% of smears. In such smears, it is usually possible to identify the organism in the so-called "school of fish" arrangement, or in isolated clusters, where the organisms have a tendency to lie parallel to each other, or end to end, and to manifest bipolar staining. Long chains are not observed in smears.

(b) Culture. The pendulum has swung back and forth with regard to the value of the culture method, in spite of the fact that 50 years ago Davis reported considerable success (85% positive cultures), following the use of human blood as a culture medium. Defibrinated rabbit's blood is a satisfactory medium, because it inhibits the growth of organisms other than Hemophilus ducreyi. If subcultures are to be made, 10% defibrinated rabbit blood may be used, following isolation of the organism upon blood-agar plates which have been placed in a jar under conditions of moisture and increased carbon dioxide content. A common error is to employ too large an inoculum upon the whole-blood medium. With a very small inoculum the tendency for contaminating organisms to overgrow the Ducreyi organism is reduced. Optimum temperatures for cultivation are between 28° and 35° C. In blood culture, the organism tends to exist in chains in which the individual organisms often vary in size and shape. In pure cultures following a number of transplants in a liquid medium, long, tangled chains of coccal and bacillary forms of the organism are seen. It is possible to demonstrate the organism through cultures as described above in approximately 75% of cases.

(c) The skin test. — There are many limitations which must be taken into consideration in evaluating the skin test in the diagnosis of chancroid. First, 8 to 15 days may elapse following the appearance of the lesion before the skin test becomes positive. Second, once the test becomes positive, it remains so for life. These two considerations limit the value of the skin test in diagnosis. It has also been observed that, in a considerable number of individuals in whom the organism can be demonstrated, the skin test does not

become positive subsequently. This appears to be caused by a lack of absorption of sufficient antigen, or by a state of anergy. In view of these considerations a negative skin test does not rule out chancroid.

(d) Subinoculation. — Exudate from a lesion placed upon a needle and vaccinated into the skin in the same manner as a smallpox vaccination will produce a pustule after 3 or 4 days in which the organism can readily be identified. Since this precludes early treatment of the lesion, this method is of value only when verification of the infection or isolation of the organism is desired. The procedure may be carried out in rabbits.

(e) Biopsy. — It has been suggested that the histologic pattern of tissue removed by biopsy methods is sufficiently distinctive to permit certain diagnosis. The complexity of this procedure, however, limits its diagnostic value.

Treatment. — The treatment of chancroid has been remarkably simplified since the introduction of the sulfonamide drugs. A dosage of 4 gm. a day until the lesion disappears is usually recommended. Streptomycin, aureomycin, chloromycetin, and terramycin, in total dosage of 5 to 10 gm. are also highly effective. However, because all of these antibiotics, except streptomycin, also influence the course of a syphilitic infection, which may be acquired at the same time, it is considered preferable to use either streptomycin or one of the sulfonamide drugs, so as not to mask the syphilitic infection.

Contact Investigation. — Lack of success in demonstrating lesions or organisms in female contacts of male cases of chancroid has resulted in extremely limited practice of contact investigation. It is urgent that a number of special studies be carried out, however, in order to gain information regarding the epidemiology of this disease, because it is only through studies of this type that sufficient knowledge will be obtained to answer many of the puzzling problems relating to this disease, and thereby pave the way for adequate preventive measures to be instituted. (Summary of a paper by Henry Packer, M. D., read at the recent Navy Preventive Medicine Conference in Cleveland, Ohio. Dr. Packer is a professor in the Division of Preventive Medicine of the University of Tennessee.)

Insect and Rodent Control

Health Hazards of Insecticide Vaporizers

Devices to vaporize insecticides used in enclosed spaces have recently been promoted commercially to such an extent that it is feared that they may be installed indiscriminately, expose humans to the vapors continuously, and thus become a health hazard. In 1951 the Interdepartmental Committee on Pest Control, consisting of representatives of the Departments of Agriculture, Interior, Army, Navy, Air Force, and the Federal Security Agency,

issued a statement concerning conditions essential to reasonably safe operation of such vaporizers. Since that time the Committee has reviewed additional information and issued the following "Revised Statement on the Health Hazards of Insecticide Vaporizers as Used for the Control of Flying Insects," which supersedes that of Sept. 21, 1951: "The Interdepartmental Committee on Pest Control in consideration of additional data has revised its release of September 21, 1951, regarding the use of lindane, DDT, or mixtures of the two in insecticide vaporizers to read as follows:

"1. The insecticide should be continuously released over a 24-hour period at a rate not to exceed 1 gm. per 15,000 cubic feet per 24 hours. The dispensing rate per hour should not vary more than 25 percent. Devices should be so constructed that output in excess of that recommended is impossible.

"2. Installation should be made only in commerical or industrial premises, and similar locations where human exposure will be on a working-day basis--not continuous.

"3. The devices should not be used in homes or sleeping quarters.

"4. Unless it can be demonstrated that contamination does not occur, the Committee recommends against the use of insecticide vaporizers in rooms or areas where food is served, processed or stored.

"5. The Interdepartmental Committee has no evidence that other insecticides when used in vaporizers in space occupied by humans or where food is present are effective or safe."

Paragraph 4 should be interpreted to mean that such devices may not be used on naval ships and stations where food is stored, processed, or served. See SecNav ltr 52-281 (NDB of 30 June 1952) or the latest revision thereof. The effectiveness of lindane vaporizers has been so reduced after one season over large sections of the country that at least one manufacturer has withdrawn his product from the market.

* * * * * *

Ditch Maintenance Equipment for Salt-Marsh Mosquito Control in Connecticut

The Division of Mosquito Control, Connecticut State Department of Health, has developed equipment for efficient maintenance of drainage ditches in the salt-marsh mosquito control program.

Experience indicates that, on the average, drainage ditches must have blocking debris removed at least once a year and some ditches must be recut every 3 years. For years previously the job of cleaning and recutting mosquito control ditches was all done by hand with hayknives, hooks, scoops, and shovels and was of necessity a slow and arduous task. In fact, with the methods and limited funds available, it was impossible to maintain these ditches properly. Work was necessarily confined to small areas where

mosquito breeding was discovered or threatened to develop, and routine ditch maintenance had to be neglected.

However, in 1949, employees of this division completed the development of a ditch-cleaning machine called the Scavel capable of cleaning 125 lineal feet of our standard ditches per minute. This machine increased efficiency to a tremendous extent and made it possible to maintain completely almost all of the standard ditches in the drainage system. A considerable amount of hand work still remains to be done, however, especially in areas where the ditches are too wide to straddle or the ditch banks are poor.

This division now has 2 such ditching machines in operation, and similar machines are now in use in New York, New Jersey, and Delaware. The original machine was built to clean a standard 10-foot ditch and has since been modified so that ditches up to 24 feet wide can be cleaned successfully.

However, there are many thousands of feet of main ditch in Connecticut so wide that the Scavel cannot be employed to clean them. These wide main ditches are now 15 to 20 years old and are starting to fill up, making it difficult to achieve good drainage in some salt marsh areas, but the problem has already been solved.

Last winter employees of the division completed the development of a hydraulic power backhoe with a swinging boom. An old tractor was used as the basic power unit and the backhoe attachment was built and mounted on the rear of the tractor. This machine is capable of either digging or cleaning ditches and it can reach out about 12 feet and dig down about 8 feet, the boom swinging in a 130 degree turn to dump to the side. This machine is capable of cleaning about 600 feet of main ditch a day; cleaning up the many thousand feet of main ditches in our system will take several years to accomplish. (Connecticut Health Bulletin, Dec. 1952)

General Sanitation

Food-Poisoning Outbreaks Reported for the Year 1949

Of all the food poisoning outbreaks that occurred in the Navy in 1949, only 20 were reported. Over 1,474 persons were affected in these outbreaks, 54 requiring hospitalization. The data here reported were compiled from various sources, such as special epidemiologic reports (in accordance with article 23-122, Manual of the Medical Department), quarterly or annual sanitary reports, and monthly reports of Epidemic Disease Control Units.

In 13 of the outbreaks, the incriminated foods were broken down as follows: ham, in 5 outbreaks; beef, 4; and Boston cream pie, chicken, raw oysters, and shrimp, respectively, in the others. Established or suspected causes were: in the cases involving ham--either keeping the meat too long before serving, inadequate cooking, or improper preparation, or contamination while slicing and holding in an open oven at such a low temperature that

optimum conditions for bacterial growth were provided; beef—slicing by butchers with infected cuts on their hands and refrigeration in large stock-pots about 24 hours before cooking (samples revealed many Staphylococcus colonies), contamination by flies or backed-up drains (samples yielding abundant coliform organisms), using an improperly cleaned meat slicer contaminated with Staphylococcus organisms, and keeping hash (yielding hemolytic staphylococci) warm over a pan of hot water; Boston cream pie—preparation from frozen eggs yielding numerous colonies of coliform organisms; roast chicken—improper preparation.

In the remaining 7 reported outbreaks the responsible food was not named, because of inadequate investigation or incomplete reports. In one of them, in which 562 Midshipmen were involved, others who had eaten identical items of food 2 hours earlier were not affected, which led to the conclusion that the infected food had been held too long before consumption. In 2 outbreaks, infected food-service personnel were believed to be the source—mess cooks had diarrhea for 4 days prior to the outbreak, or food handlers had boils on their hands.

(This is the first in a series of reviews of food-poisoning outbreaks by years. They will be followed by a summary of the years 1949-52.)

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Reports from Preventive Medicine Unit #2

The following unsafe practices have been brought officially to the attention of BuMed; and corrective action has been taken:

A civilian cafeteria manager was found to have bought salvaged eggs, cheese, and canned goods.

In an investigation of a recently negotiated contract for concentrated milk to determine whether the source of supply was satisfactory, it was revealed that the quality of milk desired was not clearly specified in the contract.

Investigation of bulged samples of canned whole milk led to the discovery that materials were not free of viable organisms in the first place, and later investigation showed need for revision of the specifications as well as better plant supervision.

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Detergents for Hand Dishwashing

The Chief of the Bureau of Ships has recommended continued trials of liquid detergents for hand dishwashing aboard submarines, in accordance with preliminary reports of field trials of both liquid and powder types. It is believed that the liquid form is efficient, economical, and space saving.

Liquid detergents similar to and more concentrated than some well-known commercial products are presently available in the supply system under Stock Number G51-C-1313-303 in 5-gallon pails. Additional new stock items will be available for 1-quart bottles, 1-gallon cans, and 55-gallon drums. BuShips recommends that proper stowage be provided for this item in order to prevent hazards from spillage.

Instructions for use, offered by the Philadelphia Naval Shipyard Industrial Test Laboratory, suggest that a suitable dishwashing detergent solution may be prepared by adding one tablespoon of liquid detergent to every gallon of water. The number of gallons in the sink may be calculated by multiplying the length by the width by the depth of water, in inches, and dividing by 231.

A similar synthetic organic detergent (painted-surface cleaner)—Stock Number G51-C-1313-350 for Type I, powder, in 5-pound cans, or Stock Number G51-C-1313-250 for Type II, flakes, in 5-pound cans—is available in the supply system and is recommended for general use in hand dishwashing. This is comparable to standard commercial brands of synthetic detergents used for hand dishwashing.

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BuShips Publication on Dishwashing Machines

BuShips has recently distributed NavShips 250-522 ("Operation and Maintenance of Dishwashing Machines") to SNDL Part I—24 through 46—and Part II—F through R. This is a valuable guide and should result in improved maintenance and operation of dishwashing machines. Medical Department personnel should encourage use of this guide.

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